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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 15.76772	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/EP 02/04044	International filing date (day/month/year) 11.04.2002	Priority date (day/month/year) 11.04.2002
International Patent Classification (IPC) or both national classification and IPC G01N21/72		
Applicant BOREALIS TECHNOLOGY OY et al.		
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 8 sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of 8 sheets.</p>		
<p>3. This report contains indications relating to the following items:</p> <p>I <input checked="" type="checkbox"/> Basis of the opinion</p> <p>II <input type="checkbox"/> Priority</p> <p>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p>IV <input checked="" type="checkbox"/> Lack of unity of invention</p> <p>V <input checked="" type="checkbox"/> Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI <input type="checkbox"/> Certain documents cited</p> <p>VII <input type="checkbox"/> Certain defects in the international application</p> <p>VIII <input type="checkbox"/> Certain observations on the international application</p>		
Date of submission of the demand 07.11.2003	Date of completion of this report 22.07.2004	
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer Scheu, M Telephone No. +31 70 340-3492	



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I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1, 7, 8 as originally filed
2-6 filed with telefax on 07.07.2004

Claims, Numbers

1-24 filed with telefax on 07.07.2004

Drawings, Sheets

1/2-2/2 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

IV. Lack of unity of invention

1. In response to the invitation to restrict or pay additional fees, the applicant has:

- ☐ restricted the claims.
☐ paid additional fees.
☐ paid additional fees under protest.
☐ neither restricted nor paid additional fees.

2. ☒ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

- ☐ complied with.
☒ not complied with for the following reasons:

see separate sheet

4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:

- ☒ all parts.
☐ the parts relating to claims Nos. .

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-23
	No: Claims	24
Inventive step (IS)	Yes: Claims	
	No: Claims	1-24
Industrial applicability (IA)	Yes: Claims	1-24
	No: Claims	

2. Citations and explanations

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see separate sheet

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Re Item IV

Lack of unity of invention

This Authority found that the application contains two groups of invention, namely

- claims 1-23: Method and apparatus for viewing the flame produced by a burner in a furnace, wherein the fuel burnt by the burner is natural gas, comprising viewing the flame through an interference filter adapted to pass light of the wavelength of sodium only.
- claim 24: Glasses comprising an interference filter in each lens thereof adapted to pass light of the wavelength of sodium only.

Interference filters adapted to pass light of the wavelength of sodium only are generally known in the art and commercially available. Hence the common feature of both group of inventions is not new.

The first group of inventions relates to a method an apparatus for viewing the flame by a burner in a furnace, wherein the fuel burnt is natural gas. The problem solved by the method an apparatus is to view the flame in a furnace even if a significant background light is available.

The second group of inventions relates to goggles transparent to a certain wavelength range. The technical problem solved by goggles with interference filters is the improved working comfort for the use and the possibility to have the filter in front of the eyes of the wearer independently of the head movements.

Thus the two inventions do have no special feature in common and do not provide solutions to a linear linked series of problems.

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Reference is made to the following documents:

- D1: US-A-4 820 046 (SOHMA KENICHI ET AL) 11 April 1989 (1989-04-11)
D2: US-A-4 466 943 (MURASE ISAO ET AL) 21 August 1984 (1984-08-21)
D3: GB-A-1 128 625 (ATOMIC ENERGY AUTHORITY UK) 25 September 1968 (1968-09-25)
D4: WO 99/50649 A (RICHARDSON GRANT STUART ;ROBINS GEORGE (GB); SECR DEFENCE (GB); JO) 7 October 1999 (1999-10-07)
D5: GB-A-1 605 192 (COMMISSARIAT ENERGIE ATOMIQUE) 7 April 1983 (1983-

04-07)

1. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of independent claims 1, 13 and 23 is not inventive in the sense of Article 33(2) PCT.

1.1. D1, which is considered as the closest prior art for independent claim 1, discloses a method of viewing the flame produced by a burner in a furnace, comprising viewing the flame through an interference filter adapted to pass light of a desired wavelength. (see column 1, line 30-column 2, line 37).

The subject-matter of claim 1 therefore differs from this known method in that the flame fuel burnt is natural gas and that the filter transmits the sodium line.

The technical effect of this features is that the signal from the flame is to transmit a strong signal from the flame and to minimize light from the background. Hence the problem solved by the present invention is to improve the visibility of burner flames against a strong background of radiant heat given off from the walls.

The solution proposed in claim 1 of the present application cannot be considered as involving an inventive step (Article 33(3) PCT) for the following reasons: The person skilled in the art and interested in viewing the flame of natural gas would determine the wavelength in which the background of the radiant heat given off from the walls is minimum and where the burner flame for natural gas peaks by a simple spectroscopic analysis. From such a spectroscopic analysis the skilled person would find that the burner flame for natural gas peaks at the sodium line. Hence the skilled person, having knowledge of D1, would choose a interference filter of the sodium line as the desired wavelength and without any inventive step arrive at a method according to claim 1.

Hence claim 1 lacks inventive step.

1.2. Apparatus claim 13 lacks inventive step for the same reasons, *mutatis mutandis*.

1.3 Method claim 1 and apparatus claim 13 lack also inventive step with respect to D2 (cf. figure 1, column 1, lines 11-20; column 3, lines 64 - column 4, line 14) for corresponding arguments as presented in the previous paragraphs, *mutatis mutandis*.

1.4 Document D4, considered as the closest prior art for claim 23, discloses a furnace (2) comprising a burner suitable for burning natural gas (when natural gas is attached to inlets 3 or 4) within the walls thereof, and a window (17) provided in a wall of the

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furnace (see page 6, line 9), wherein an interference filter adapted to pass light of the wavelength of sodium only is provided in proximity to the window (see page 6, paragraph 3).

Applying the interference filter *in or on the window* is a slight constructional change in which comes within the scope of the customary practice followed by persons skilled in the art, especially as the advantages thus achieved (e.g. less bulky apparatus) can readily be foreseen.

1.5 Claim 23 also lacks inventive step with regard to D3 (see figure and lines 45-61) for the same reasons as given in the previous paragraph, *mutatis mutandis*.

2. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 24 is not new in the sense of Article 33(2) PCT with respect to document D5 and not inventive in the sense of Article 33(3) PCT over common knowledge.

2.1 D5 discloses glasses comprising an interference filter provided in each lens thereof, wherein the interference filter is adapted to pass light of
a) the combined wavelength of 508,5 nm **AND** 589,5 nm **AND** 628 nm as well as
b) one of the above wavelengths, i.e. 508.5 nm **OR** 589,5 nm **OR** 628 nm.
(see claim 2; see claim 4: "the spectral transmission **window or windows...**")

Hence D5 discloses glasses with an interference filter transmissive for the sodium line (589,5 nm) only. Consequently, claim 24 lacks novelty in view of D5.

2.2 Glasses or goggles with interference filters as well as interference filters transmitting the sodium line only are both are common knowledge and both commercially available. The skilled person would not require any inventive skill to build glasses with 589,5 nm transmissive interference filters in each lens thereof.
Consequently claim 24 lacks inventive step over common knowledge.

2. Dependent claims 2-12 and 14-22 do not contain any features which, in combination

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with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step as the features are either disclosed in the cited documents D1-D4 or refer to mere design options which fall within customary practise of the skilled person